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Feelings of connectedness to nature: A comparison of Park & Recreation Management students and Sport Management students.

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Feelings of connectedness to nature:

A comparison of Park & Recreation Management students and Sport Management students

Undergraduate Thesis submitted in partial fulfillment of Honors

By

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The Honors College

Midway Honors Scholars Program

East Tennessee State University

November 2013

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Abstract

In the face of the present consumer-based environmental movement, leaders in many industries and disciplines are striving to understand why people are “going green” in order to market to them. Researchers have been studying ways in which people connect to the environmental movement, and researchers in the field of sport and recreation are also conducting such studies. Several surveys have been developed to measure these connections; one such survey instrument is the Connectedness to Nature Scale (CNS). In the present study, the CNS was re-created online, and a link to the survey was sent via email to students studying Park & Recreation Management and Sport Management at a southeastern regional university. It was found that the Park & Recreation Management students felt significantly more connected to nature than the Sport Management students, and the oldest students in the majors felt significantly more connected to nature than the youngest students. These findings agree with other studies that individuals with a stronger focus on outdoor recreation feel a greater connection to nature than those with a stronger focus on organized sport.

Acknowledgments

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Introduction

Studies have suggested that many individuals acquire a positive attitude toward the environment and participate in environmentally responsible behaviors because they feel connected to the environment (Fisher, 2002; Mayer & Frantz, 2004; Roszak, Gomes, & Kanner, 1995; Roszak, 2001). Although personal engagement in environmentally responsible behaviors may not be a direct effect of feeling connected to nature, studies have found that those who do feel a sense of connection to nature are more likely to engage in environmentally responsible behaviors when those individuals learn about ways to become more environmentally responsible (Berns & Simpson, 2009; Nord, Luloff, & Bridger, 1998).

Research shows that people who spend more leisure time outdoors in nature tend to feel more connected to nature than people who spend more leisure time in artificial nature (i.e. human-built environments that simulate natural environments, such as in swimming pools and video games) or indoors (Kals, Schumacher, & Montada, 1999; Vining, Merrick, & Price, 2008). For children, this connection occurs best through unstructured outdoor play, which research suggests is beneficial for child development (e.g. motor skills, problem-solving skills, and personality development) (White & Hendee, 2009). For adults, it has been found that people who participate in semi-structured outdoor activities involving direct experience between the individual and the natural resource in which the activity is performed tend to feel more connected to nature than those who participate in more structured activities such as organized sports (Berns & Simpson, 2009). Several surveys have been developed to measure these connections; one such survey is the Connectedness to Nature Scale (CNS). Mayer and Frantz (2004) created the Connectedness to Nature Scale (CNS) as a means of measuring people's affectional feelings of their personal connection to the natural world.

In this study, the CNS was distributed to all students majoring in Sport and Leisure Management at a southeastern regional university. Within the major, students can choose from two available concentrations: Park & Recreation Management and Sport Management. Given the literature on the topic of recreation and connection to nature (Berns & Simpson, 2009; Kals et al., 1999; Migliarese, 2008; Vining et al., 2008; West, 2010), and the assumption that people generally choose a major in college partly because they have some personal interest in that major's content, it was expected that the Park & Recreation Management students will score higher on the CNS than the Sport Management students. This result would suggest that the Park & Recreation Management students feel a greater sense of connectedness to nature than the Sport Management students. These findings may agree with other studies that people with a stronger focus on outdoor recreation feel a greater connection to nature than people with a stronger focus on organized sport (Berns & Simpson, 2009; Kals et al., 1999; Migliarese, 2008; Vining et al., 2008; West, 2010).

Rationale

While researchers have attempted to study the human-nature connection in a variety of ways, the Connectedness to Nature Scale is a relatively new measure of affective connectedness and has potential to be used in more studies, from surveying park visitors to measuring nature program effectiveness to understanding the ways people feel connected to nature through given aspects of their lives. Researchers in this field should consider how cognitive, behavioral, and affective measures of connectedness to nature relate to the industries of recreation and sport; following trends such as the public's connection to nature can help the industry market appropriately and provide preferred services, among other positive ways this information can be applied to the industry and its businesses. The present research is needed because literature

involving the study of connectedness to nature between outdoor recreation and organized sport, especially among university students, is limited.

Purpose

The purpose of this study was to explore which of two groups of students reports a greater sense of connectedness to nature: students within the Park & Recreation Management concentration or students within the Sport Management concentration.

Objective

1. To determine whether Park & Recreation Management students or Sport Management students feel more connected to nature.

Research Question

RQ1: Which students feel more connected to nature: those studying Park & Recreation Management, or those studying Sport Management?

Hypotheses

H₁: The Park & Recreation Management students will have significantly higher feelings of connectedness to nature scores via the CNS than the Sport Management students.

H₂: The older students will have significantly higher feelings of connectedness to nature scores via the CNS than younger students.

Definitions

Connectedness to Nature. In the original literature by Mayer and Frantz (2004), the authors refer to the study by Schultz (2002) to define “connectedness to nature” as “the extent to which an individual includes nature within his/her cognitive representation of self” (p. 67).

Outdoor Recreation. For this study, the term “outdoor recreation” is operationalized by the natural resource in which the activity takes place. Using the definition from the Florida

Department of Environmental Protection, “resource-based outdoor recreation...is dependent upon some element or combination of elements in the natural or cultural environments that cannot be easily duplicated by man” (2008, p. 1-3). Another way of stating this definition can be found in the Ibrahim and Cordes (2008) textbook *Outdoor Recreation*:

...We use the term outdoor recreation to encompass the organized free-time activities participated in for their own sake and where there is an interaction between the participant and an element of nature. Surfing is an outdoor recreational activity where there is interaction between the participant and water, an element of nature. Football is not an outdoor recreational activity under our definition, for although it is an organized recreational activity, nature plays a minimal role in it. Nature plays a more important role in mountain climbing or cross-country skiing than it does in football. (p. 5)

This sample from Ibrahim and Cordes (2008) not only defines the term but also explains the implications of the definition, which may aid readers of this study in differentiating vocabulary used within this paper.

Organized Sport. This study accepts the widely used definition of sport as “well-established, officially governed competitive physical activities in which participants are motivated by internal and external rewards” (Coakley, 2009, p. 6).

For the purposes of this study, the term “organized sport” is also used to differentiate non resource-based sport and resource-based sport, e.g. baseball versus a kayaking race, or in the example under the “outdoor recreation” definition between football and surfing. While some outdoor recreational activities can be competitive under special circumstances, the activities defined as organized sport for this study are not resource-dependent and can be performed in non-nature environments without losing the character of the activity (e.g. soccer, handball, badminton), whereas outdoor recreational activities are resource-dependent and cannot be adequately performed in non-nature environments (e.g. rafting, hiking, hunting). These terms were not used in the survey instrument and are only used here in understanding the literature.

Literature Review and Theoretical Framework

The topic of sustainability is gaining public attention these days. From the “green-washing” of commercial markets to the greenhouse gas reduction policies placed on industry by governments, many public and private sectors are considering how the environmental movement can help the planet and the economy. Public interest in so-called “green” products has given rise to companies manufacturing new products and creating new marketing efforts with the purpose of promoting the environmentally friendly aspects of their businesses, products, and services. In many areas of service industries, organizations are finding ways to profit from these current trends, and in some cases that means actually adopting practices that are sustainable, such as Walmart’s solar panel installations to power their facilities. The entertainment industry relies heavily on advertising products and services, and nowadays people are seeing significantly more advertisements for things “green” (Ahern, Bortree, & Smith, 2012; TerraChoice, 2010). Now, even in the sport industry, leaders are recognizing that public interest in sustainable practices can be profitable for their own businesses at a resource-consumption level (Pfahl, 2013). Because these service industries (e.g. entertainment, sport, and even tourism and recreation), rely on public participation for profits, the providers of such services are finding ways to infiltrate the “green” market to attract new participants and maintain relationships with current participants (Western Governors’ Association, 2012).

Individuals recognized the importance of environmentally friendly practices before industries and businesses took notice. Everyday people inquired about their relationship with the natural world, and as this basic inquiry grew, scientists began to conduct research about the world and people’s relationship to it. In 1948, United States Forest Service Ranger Aldo Leopold published a book entitled *A Sand County Almanac*. In this book were his experiences of traveling

the country for the Forest Service, life at his home in Wisconsin, and his thoughts on how the human-nature relationship does and should occur. In 1962, journalist and scientist Rachel Carson published *Silent Spring* detailing how certain industrial practices of the time negatively altered the natural community. More recently, Richard Louv's 2005 book *Last Child in the Woods* discussed a phenomenon dubbed "nature deficit disorder" as the author outlined the importance for children to have unstructured outdoor play time in their schedules. Books such as these have significantly altered how people perceive their relationship to nature by exposing particular observations, data, or viewpoints about the human-nature relationship. Such information has led to investigations about how human actions affect the planet as well as studies about how people feel about that relationship and how such a relationship forms; examples of such studies are detailed below.

Researchers have attempted to explain human actions in many ways, with the Theory of Reasoned Action (Fishbein & Ajzen, 1975), Theory of Planned Behavior (Ajzen, 1985), Social Cognitive Theory (Turner, 1985), Value Belief Norm Theory (Stern, Dietz, Kalof, & Guagnano, 1995), and more. Researchers have also focused on studying people's actions and attitudes toward the natural environment, including the New Environmental Paradigm (Dunlap & Van Liere, 1978), Model of Responsible Environmental Behavior (Hines, Hungerford, & Tomera, 1987), Inclusion of Nature in the Self Scale (Schultz, 2001), the Connectedness to Nature Scale (Mayer & Frantz, 2004), and more recently the Nature Relatedness Scale (Nisbet, Zelenski, & Murphy, 2009).

Connectedness to Nature

The Connectedness to Nature Scale (CNS) was created in 2004 as a way to measure an individual's feelings of being emotionally connected to the natural world. In the original research

for the CNS, a total of five studies ensured that the CNS was a reliable and valid way of measuring connectedness to nature. Each of the following five studies discussed below are from the original literature by Mayer and Frantz (2004).

In their first study, Mayer and Frantz (2004) found that men and women did not differ significantly on the CNS. In their second study, it was established that social desirability bias and level of education did not affect CNS scores. The third study reported what may be the most relevant finding to the present research; participants “who chose to study environmental issues were...more connected to nature than those who chose to study other topics” (p. 509), given that land use for varying recreation types and users is in many ways an environmental issue. The fourth study established that high school and college students were less connected to nature than those with college or graduate degrees. The fifth study found that CNS scores correlate with biospheric values (i.e. values related to concern for the natural world like plants and animals) and environmentally responsible behaviors. Each of these five studies offered additional information about the reliability or validity of the CNS, further emphasizing its usefulness to measure intended variables and highlighting why the authors chose to use the CNS for the present research.

Several studies have since used the CNS to measure participants’ feelings of connectedness to nature in a variety of circumstances. One study found that people with a high sense of objective self-awareness tended to experience feeling less connected to nature (Frantz, Mayer, Norton, & Rock, 2005). Another study found that rural youth are more connected physically and emotionally to natural settings than urban youth (Klassen, 2010). A more recent study found that CNS scores correlated to environmentally responsible behaviors (Hoot & Friedman, 2011). Another study found that simply being exposed to nature will increase a

person's connectedness to nature scores among other positive skills and traits (Mayer, Frantz, Bruehlman-Senecal, & Dolliver, 2009).

In their research to establish a more effective measurement of the human-nature relationship, Nisbet, Zelenski, and Murphy (2009) suggested that the CNS is not the best way to measure connectedness to nature because the scale lacks a measure for the physical connection between individuals and nature, which the authors of that study considered essential to the human-nature relationship. However, administering the CNS instead of Nisbet et al.'s Nature Relatedness Scale (2009) was preferred for the current research because the sample studied was organized by choice of major rather than activity participation.

Vining, Merrick, and Price (2008) studied human perceptions of connectedness to nature as a way of determining the factors people consider when defining their individual connectedness. The authors of that study attempted to understand the context of the human-nature relationship. They found that the majority of study participants considered themselves part of nature but would describe natural environments as places without human interference, as if the human participants did not belong in natural settings; the authors considered it significant to examine why this contradiction in perception occurs. It is offered that humans may tend to feel inherently part of nature but separate from it because of living in artificial, man-made environments rather than in the pristine natural settings that they perceive to be actual nature. After discussion with study participants, the authors noted that people may view themselves as both "part of" and "separate from" nature at the same time. The presence of this false dichotomy may influence the present study's survey results in that participants may define their connection differently than other participants.

Although feeling connected to nature may not be the sole way an individual practices

environmentally responsible behaviors, it was found that people are generally more ecologically conscious when they feel associated with nature (Ernst & Theimer, 2011). As discussed in White (2009), no single, agreed-upon definition of the term “ecological consciousness” exists and instead the term is used implicitly, available for reader interpretation. For the purposes of this study, a condensed combination of definitions was used to describe ecological consciousness as a “recognition, respect and valuing of nonhuman nature, experience of connection and dependence on nonhuman nature, concern and action for nature and a sense of self that includes nonhuman other” (White, 2009, p. 15).

In the Ernst and Theimer (2011) study, it was also found that people who feel less associated with nature can still have concern for the environment but may not be as ecologically conscious, meaning they may not think about how their behaviors affect the ecosystem beyond their personal experience with that behavior. For example, a person in the latter group might consider buying a bag of potato chips labeled “Natural” or “Organic,” but this person might fail to consider aspects of the supply chain that impact the environment in other ways (e.g. the chips come in a plastic bag created from petroleum barreled in the Middle East, or that the potatoes were grown in Idaho, flown to Wisconsin for processing, flown to Canada for packaging, and then transported in bulk to a distribution center in Kentucky, before being transported to a grocery store in South Carolina where the chips are purchased). A person who feels more strongly associated with nature might more readily be able to consider those aspects of modern living that affect the larger ecosystem.

Recreation and Sport

A growing body of research suggests participating in recreational activities outdoors is not only good for personal and community health and wellness (Brymer, Cuddihy, & Sharma-

Brymer, 2010; Resources for the Future, 2009) but also can forge connections between people and the environment (Migliarese, 2008; West, 2010) and even lead to increased environmental concern (Kareiva, 2008; Nord et al., 1998; Shultis, 2001). Martin (2004) studied changes in human-nature relationships among students in a university outdoor education program over two years. The study found that participating in outdoor adventure increases an individual's connectedness to nature through outdoor education techniques. Martin (2004) also found that outdoor programs involving certain outdoor skills could foster individuals' connections to nature.

Among other outdoor activities, Brymer, Downey, and Gray (2009) found that many people who participate in extreme outdoor sports gain feelings of connectedness to nature through their sport (e.g. Building, Aerial, Span, and Earth jumping; extreme skiing; waterfall kayaking; big wave surfing; high-level mountaineering; or climbing without ropes) and sometimes even consider themselves to be part of nature during their sport experiences. This research suggests multiple levels of recreation can foster connectedness to nature, including those activities that put the self in physical danger.

Additionally, in the field of organized sport, the idea of sustainability has steadily gained attention. One of the first books on the subject of sustainability in sport was published in 1994, entitled *Greening Our Games* (Chernushenko, 1994). Thereafter, attention to environmentally responsible behaviors in sport activities has been seen in the public's response, industry practices, and professional research. One author wrote that the environmental impacts of major sporting events like the Super Bowl, Olympics, and World Cup have "spawned an environmental movement with two broad goals: to reduce the ecological footprint of sports activities, and to exploit the popularity of sports to raise environmental awareness in general" (Schmidt, 2006, p. A 287). In 2007, a *Sports Illustrated* cover article established a need for more research and

attention to environmental practices in all aspects of organized sport (Wolff, 2007), after which a number of studies were conducted in response (Butryn & Masucci, 2009; Mincyte, Casper, & Cole, 2009; Pfahl, 2013). In Mincyte, Casper, and Cole (2009), the relationship between a changing environment, environmental health, government and agency policies, and participating in organized sports was examined with consideration of the effects of land use for sports and its players. Butryn and Masucci (2009) found that professional athletes now depend more on technology to improve performance in organized sports, and these athletes only made moderate connections between using this technology and their environmental impact. Some studies have been more specific to a sport, such as the environmental impacts of golf (Wheeler & Nauright, 2006) and bicycling (Horton, 2006). Although research has been reported on environmentally responsible behaviors in the sport industry, as presented above, little literature was found specifically on the relationship between organized sport and connectedness to nature.

Besides the research on individuals' connection to nature in relation to quality and quantity of time spent in actual nature, little research on individuals' connection to nature in a university setting was found. The literature did show that the more time a person spends outside in nature, the greater likelihood that person will feel a sense of connectedness to the natural world (Klassen, 2010; Martin, 2004; Migliarese, 2008; West, 2010). Furthermore, although children benefit in a variety of ways from participating in unstructured outdoor play activities (Western Governors' Association, 2012), adults benefit from participating in skilled and structured outdoor recreation activities (Martin, 2004; West, 2010). It has yet to be studied if the pursuit of a degree in recreation or sport is related to connectedness to nature.

Methods and Procedures

This study was conducted at a regional university in the southeast United States. This research focused on undergraduate students majoring in Sport and Leisure Management and graduate students majoring in Sport Management. Students chose between two concentrations in the major: Park & Recreation Management and Sport Management. Forty-eight students declared Park & Recreation Management as their concentration, 104 students declared Sport Management, and 17 students had not declared a concentration.

Data Collection Procedures

This research used the established Connectedness to Nature Scale (CNS) by Mayer and Frantz (2004). The CNS consists of 14 statements that participants score in Likert-style 1 through 5 (1 = strongly disagree and 5 = strongly agree). The scale possessed high internal consistency ($\alpha = .84$), test-retest reliability ($r = .79$), and only one factor. Three survey items (4, 12, and 14) were reverse-scored because the items were negative statements about connectedness to nature. For the present study, following the CNS section of the survey, five questions gathered data about major concentration, student classification, gender identity, age, and career objectives (Appendix D).

After the survey was finalized online, an email containing the link to the survey was sent to all undergraduate Sport and Leisure Management majors and Sport Management graduate students (12 September). Two follow up emails were sent (24 September and 24 October) as reminders to take the survey. The survey was available online for seven weeks before it was closed on 31 October. After a student took the survey once, the participant could not take the survey again because the link only accepted one survey completion from that student's email address, even after students received the survey link multiple times in their email inbox.

Data Analysis

Data were analyzed using SPSS 20.1. Participation rates within the groups were as follows: 56.3% of Park & Recreation Management students participated (27 of 48), and 23.1% of Sport Management students participated (24 of 104); all respondents indicated Park & Recreation Management or Sport Management in the survey. The mean CNS score was 3.56 ($sd = .57$), with a range of 2.93 among individuals' scores (the lowest score by a participant was 1.93; the highest score by a participant was 4.86). In the CNS, a low score (1) indicated weaker feelings of connectedness to nature, and a high score (5) indicated stronger feelings of connectedness to nature.

Results

Of the 169 students within the major, 54 students (17 female, 37 male) participated in the study. Of this sample, three were freshmen (5.6%), seven were sophomores (13.0%), nine were juniors (16.7%), 29 were seniors (53.7%), and six were graduate students (11.1%). Twenty-seven Park & Recreation Management students (52.9%) and 24 Sport Management students (47.1%) participated in this study.

A number of descriptive analyses were performed. A t-test demonstrated no significant difference in Connectedness to Nature Scale (CNS) scores [$t(52) = -.05, p > .05$] between males ($m = 3.56, sd = .43$) and females ($m = 3.57, sd = .63$).

A t-test compared the mean CNS scores of the two concentrations, Park & Recreation Management and Sport Management, and found a significant difference between the means of the two groups [$t(49) = 3.56, p < .01$]. The mean CNS scores of the Park & Recreation Management students were significantly higher ($m = 3.83, sd = .57$) than the Sport Management group ($m = 3.31, sd = .46$).

No significant difference [$F(2,51) = 1.89, p > .05$] between student classifications (e.g. freshman, graduate, etc.) and CNS scores was found in this sample.

At the study university, a considerable number of non-traditional students, those who either take more than four years to complete a degree or who have returned to college after a hiatus from school, explains why such age differences exist in the sample population. The sample was organized into the following age groups: 18-21 year olds, 22-23 year olds, and students aged 24 and older. A one-way ANOVA was used to compare CNS scores of the different age groups. A significant difference was found among the age groups [$F(2,50) = 6.07, p < .01$]. A Bonferroni analysis was used to determine the nature of the age differences. The

analysis revealed that a difference existed between students 24 and over ($m = 3.94$, $sd = .57$) and the 18-21 year old group ($m = 3.32$, $sd = .56$). No differences were found between the 22-23 year old group ($m = 3.55$, $sd = .49$) and either the 18-21 year old group or the 24 and over age group.

A comparison of CNS scores among age groups within the concentrations was calculated. From this calculation, no significant difference in CNS scores between age groups of the Park & Recreation Management students was found, but a significant difference in CNS scores between the youngest age group (18-21) and the oldest age group (24 and older) of the Sport Management students did exist.

The top five career objectives for Park & Recreation Management students included:

1. Federal recreation
2. Commercial recreation
3. Municipal sport and Recreational sport (tie)
4. Municipal sport and Recreational sport (tie)
5. Events

The top five career objectives for Sport Management students included:

1. Professional sport and College sport (tie)
2. Professional sport and College sport (tie)
3. High school administration
4. High school coach and Events (tie)
5. High school coach and Events (tie)

Discussion

The Park & Recreation Management students had a significantly higher CNS score than Sport Management students; thus, Hypothesis 1, Park & Recreation Management students will have significantly higher feelings of connectedness to nature scores via the CNS than the Sport Management students, was supported. This result agrees with the Mayer and Frantz study (2004) that students electing to study environmental issues feel more connected to nature than students studying other issues (e.g. Sport Management) because managing public lands for competing recreational users (e.g. Park & Recreation Management) is in many ways an environmental issue.

Sport Management scores were lower than Park & Recreation Management scores; the number one career objective for Sport Management students was professional and college sport. This result is interesting because professional sport teams and venues and university sport teams and stadiums all over the nation are moving toward sustainable practices (Natural Resources Defense Council [NRDC], 2012; NRDC, 2013). If students studying sport are not connected to nature and sustainability issues are not addressed, sustainability efforts at the upper levels of sport may be hindered and might impede the trickle down effect into high school and other lower-level sports.

Also, the oldest Sport Management group had higher CNS scores than the youngest Sport Management participants. If sustainability is the growing trend in the sport industry, then the older students appear to be paying more attention to the field because they are closest to entering the profession. Louv (2005) provides another interpretation for these results. In his book, Louv (2005) suggested that children are increasingly restricted from outdoor play, which could translate into younger generations feeling less connected to nature. This result may reflect the consequence of such a phenomenon.

Limitations

Because the study participants chose to pursue specific Park & Recreation Management or Sport Management concentrations instead of a general Management degree or another specified discipline, it can be assumed that students within these degree concentrations have an interest in these fields, though this factor was not studied in the current research. If it is assumed that these students have at some point participated or currently participate in outdoor recreation or organized sport, respectively, then it can also be assumed that the students of these concentrations may recreate across both disciplines, where a student of either concentration may enjoy outdoor recreational activities as well as playing organized sports. This correlation between choice of concentration and choice of leisure activity was not studied in the current research and therefore cannot be accounted for in the results.

In the present study, the ratio of survey respondents was unequal between Park & Recreation Management students and Sport Management students: 27 of 48 Park & Recreation Management students (56.3%) and 24 of 104 Sport Management students (23.1%); a greater participation rate from the Sport Management group would have provided more representative results. The ratio of students emailed the survey and those who took the survey was low (32%); more respondents would have provided a more representative sample of the population's feelings of connectedness to nature.

The researcher conducting the survey was a Park & Recreation Management student, which may have affected response rates because those who took the survey recognized the name of the student conducting it. Furthermore, because the majority of Park & Recreation Management students knew the survey distributor more than the Sport Management students knew the survey distributor, the survey respondents may have felt compelled to answer in a way

they believed the researcher found desirable and in doing so could have affected the results.

Delimitations

Where previous literature examined participants' activities, this study examined if field of study might have an effect on connectedness to nature. This research studied university students seeking Management degrees from a southeastern regional university's College of Education, so the foci of recreation and sport may be considered moot in regard to the students' actual leisure pursuits. The choice of field of study is here limited to Park & Recreation Management or Sport Management to stay within the fields of recreation and sport. Although students of any major are likely to have varying degrees of feelings of connectedness to nature, this research focused on students within the fields of recreation and sport for purposes of investigating any potential correlation to connectedness to nature within these fields of study. Because the students in these programs are more likely than students in other programs to become professionals in the fields of recreation and sport, it was determined that these major concentrations would be closest to the activity pursuits described in previous studies.

Recommendations for Future Investigation

It is recognized that some students within a particular discipline may not actively take part in their chosen professional fields; some students may not pursue careers within the discipline related to their majors. So, although the Park & Recreation Management students had higher connectedness to nature scores than Sport Management students, these results do not effectively determine if participation in outdoor recreation or organized sport are correlated to that connectedness. No previous studies have been reported on choice of major affecting connectedness to nature. It may be attractive to assert that the Park & Recreation Management students are more connected to nature because of their participation in resource-based outdoor

recreation, but determining students' leisure activities was outside the scope of this study.

Determining from where Sport Management students' connectedness to nature originates would be a significant next step in this research. Determining a causal agent for Park & Recreation Management students' higher CNS scores would also be a significant next step in this research.

It would benefit the research to determine why the oldest Sport Management students feel more connected to nature than the youngest students, why the differences in CNS scores between age groups exist, in what activities these groups engage, and where they may develop their connectedness to nature or secure information about sustainability. Furthermore, it would be useful to conduct such a study in similar departments of other universities to see if the greater feelings of connectedness to nature in Park & Recreation Management students is a trend across the region.

For investigations into the effect of leisure pursuits on connectedness to nature, it would be beneficial to study leisure preferences and participation of Park & Recreation Management students and Sport Management students. Furthermore, it would be of interest whether these students' choice of major concentration was affected by their leisure pursuits or if their leisure pursuits were changed through participation in their respective programs. It would also be useful to discover if the type of leisure participation preferences by college degree (e.g. in this case, recreation or sport) is an indicator of personal feelings of connectedness to nature.

Mayer and Frantz (2004) offer their own calls for future research with the CNS. It is suggested that future research address the relationship between the CNS and environmentally responsible behaviors, whether feeling connected to nature is enough to engage in environmentally responsible behaviors, or whether those who feel a greater sense of connectedness to nature simply have an increased likelihood of appropriating a sense of

environmental responsibility and engaging in environmentally responsible behaviors. In research involving the human-nature relationship to life satisfaction studies, Mayer and Frantz (2004) suggest attempting to establish if connectedness to nature may be related to life satisfaction.

Conclusions

It is recognized that both establishing and measuring individuals' feelings of connectedness to nature are complex. The authors of this study suggest that participation in outdoor recreation enhances the potential of the connection to nature rather than being the sole cause, based on the literature reviewed (Berns & Simpson, 2009; Brymer et al., 2009; Kals et al., 1999; Kareiva, 2008; Klassen, 2010; Martin, 2004; Mayer & Frantz, 2004; Mayer et al., 2009; Migliarese, 2008; Nord et al., 1998; Shultis, 2001; Vining et al., 2008; West, 2010). However, some conclusions can be drawn from the analyses of these data. First, the majority of Sport and Leisure Management majors at this university did not participate in this research survey, and a non-response bias study was not conducted, so the results may not be representative. Second, a greater difference exists between Park & Recreation Management students and Sport Management students than simply a chosen concentration and course of study. Finally, students may have chosen a career focus, but they may lack a working knowledge of that professional field, indicating a need for more exploratory education and study of professional industries.

Appendix A IRB Approval Letter



East Tennessee State University

Office for the Protection of Human Research Subjects • Box 70565 • Johnson City, Tennessee 37614-1707
Phone: (423) 439-6053 Fax: (423) 439-6060

IRB APPROVAL – Initial Exempt

May 2, 2013

Nicholas Scarborough

RE: Feelings of connectedness to nature: A comparison of Park & Recreation Management and Sport Management students
IRB#: c0413.12e

On **May 2, 2013**, an exempt approval was granted in accordance with 45 CFR 46.101(b)(2). It is understood this project will be conducted in full accordance with all applicable sections of the IRB Policies. No continuing review is required. The exempt approval will be reported to the convened board on the next agenda.

- xform New Protocol Submission; ICD (revised- Dear Participant); Email Script; Survey; Resume

Projects involving Mountain States Health Alliance must also be approved by MSHA following IRB approval prior to initiating the study.

Unanticipated Problems Involving Risks to Subjects or Others must be reported to the IRB (and VA R&D if applicable) within 10 working days.

Proposed changes in approved research cannot be initiated without IRB review and approval. The only exception to this rule is that a change can be made prior to IRB approval when necessary to eliminate apparent immediate hazards to the research subjects [21 CFR 56.108 (a)(4)]. In such a case, the IRB must be promptly informed of the change following its implementation (within 10 working days) on Form 109 (www.etsu.edu/irb). The IRB will review the change to determine that it is consistent with ensuring the subject's continued welfare.

Sincerely,
Brian C. Martin, Ph.D.
Vice-Chair, ETSU Campus IRB

Cc: Joy Wachs



Accredited Since December 2005

Appendix B IRB Approved Consent

20 April 2013

Dear Participant:

My name is **Nicholas Scarborough**, and I am an undergraduate student at East Tennessee State University. I am working on my bachelor's degree in **Park and Recreation Management**. In order to finish my studies, I need to complete a research project. The name of my research study is **Feelings of connectedness to nature: A comparison of Park & Recreation Management students and Sport Management students**.

The purpose of this study is to **compare the feelings of connectedness to nature between Park & Recreation Management students and Sport Management students**. I would like to give a brief survey questionnaire to **all ETSU SALM students**. It should only take about **five minutes** to complete. You will be asked questions about **your personal feelings of your connection to nature**.

This method is completely anonymous and confidential. In other words, there will be no way to connect your name with your responses. Although your rights and privacy will be maintained, the Secretary of the Department of Health and Human Services, the ETSU IRB (for non-medical research) and personnel particular to this research **including myself and Dr. Andy Dotterweich** have access to the study records.

If you do not want to fill out the survey, it will not affect you in any way. There are no alternative procedures except to choose not to participate in the study.

Participation in this research experiment is voluntary. You may refuse to participate. You can quit at any time. If you quit or refuse to participate, the benefits or treatment to which you are otherwise entitled will not be affected.

If you have any research-related questions or problems, you may contact me at **423-322-4992**. I am working on this project under the supervision of **Dr. Andy Dotterweich**. You may reach him at **423-439-5261**. Also, the chairperson of the Institutional Review Board at East Tennessee State University is available at 423-439-6054 if you have questions about your rights as a research subject. If you have any questions or concerns about the research and want to talk to someone independent of the research team or you can't reach the study staff, you may call an IRB Coordinator at 423-439-6055 or 423-439-6002.

By clicking the link to the survey, you are giving your consent to participate in this study.

Sincerely,

Nicholas Scarborough

APPROVED
By the ETSU IRB

MAY 02 2013

By 
Chair/IRB Coordinator

Appendix C

IRB Approved Email Language

My name is Nicholas Scarborough, and I am an undergraduate Park and Recreation Management student at East Tennessee State University. I am conducting a research survey comparing the feelings of connectedness to nature between Park and Recreation Management students and Sport Management students. By completing the survey you are voluntarily agreeing to participate in the study. You must be at least 18 years of age or older to participate in the study.

Your participation is completely voluntary and no personal information will be collected. You can stop taking the survey at any time; however, your responses are very important to this research. The survey is short and should not take more than 5-10 minutes to complete.

Please put no identifying remarks on the survey. Your identity is kept anonymous and will not be revealed in the results. Only general comparisons will be made and reported in summary form. The following voluntary, anonymous questionnaire will be the method of data collection.

If you have questions concerning the study, please do not hesitate to contact me or Dr. Andy Dotterweich using the numbers or email addresses below.

Thank you for your time and for agreeing to participate in the study.

Respectfully,

Nicholas Scarborough

Contact Information:
Nicholas Scarborough
423-322-4992
scarboroughn@goldmail.etsu.edu

Contact Information:
Andy R. Dotterweich
423-439-5261
dotterwa@etsu.edu

APPROVED
By the ETSU IRB

MAY 02 2013

By 
Chair/IRB Coordinator

Appendix D

Survey Instrument

Welcome to the Connectedness to Nature Survey

Dear Participant:

My name is Nicholas Scarborough, and I am an undergraduate student at East Tennessee State University. I am working on my bachelor's degree in Park and Recreation Management. In order to finish my studies, I need to complete a research project. The name of my research study is Feelings of connectedness to nature: A comparison of Park & Recreation Management students and Sport Management students.

The purpose of this study is to compare the feelings of connectedness to nature between Park & Recreation Management students and Sport Management students. I would like to give a brief survey questionnaire to all ETSU SALM students. It should only take about five minutes to complete. You will be asked questions about your personal feelings of your connection to nature. Since this project deals with personal feelings, it might cause some minor stress. However, you may also feel better after you have had the opportunity to express yourselves about your connection to nature. This study may provide benefit by providing more information about being connected to nature.

This method is completely anonymous and confidential. In other words, there will be no way to connect your name with your responses. Although your rights and privacy will be maintained, the Secretary of the Department of Health and Human Services, the ETSU IRB (for non-medical research) and personnel particular to this research including myself and Dr. Andrew Dotterweich have access to the study records.

If you do not want to fill out the survey, it will not affect you in any way. There are no alternative procedures except to choose not to participate in the study.

Participation in this research experiment is voluntary. You may refuse to participate. You can quit at any time. If you quit or refuse to participate, the benefits or treatment to which you are otherwise entitled will not be affected.

If you have any research-related questions or problems, you may contact me at 423-322-4992. I am working on this project under the supervision of Dr. Andrew Dotterweich. You may reach him at 423-439-5261. Also, the chairperson of the Institutional Review Board at East Tennessee State University is available at 423-439-6054 if you have questions about your rights as a research subject. If you have any questions or concerns about the research and want to talk to someone independent of the research team or you can't reach the study staff, you may call an IRB Coordinator at 423-439-6055 or 423-439-6002.

Sincerely,

Nicholas Scarborough

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Welcome to the Connectedness to Nature Survey

Introduction

As stated previously, this survey is a measure of connectedness to nature. This survey is completely voluntary, but we would appreciate your willingness to help. You may choose to discontinue at any point by exiting from the site. If you choose to continue please proceed to the next page.

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Welcome to the Connectedness to Nature Survey

Connectedness to Nature

Please answer each of these questions in terms of the way you generally feel. There are no right or wrong answers. Using the scale provided in the space next to each question simply state as honestly and candidly as you can what you are presently experiencing. The scale is 1 to 5 where 1 means "strongly disagree" and 5 means "strongly agree".

*** 1. I often feel a sense of oneness with the natural world around me.**

1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*** 2. I think of the natural world as a community to which I belong.**

1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*** 3. I recognize and appreciate the intelligence of other living organisms.**

1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*** 4. I often feel disconnected from nature.**

1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*** 5. When I think of my life, I imagine myself to be part of a larger cyclical process of living.**

1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*** 6. I often feel a kinship with animals and plants.**

1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*** 7. I feel as though I belong to the Earth as equally as it belongs to me.**

1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*** 8. I have a deep understanding of how my actions affect the natural world.**

1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*** 9. I often feel part of the web of life.**

1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*** 10. I feel that all inhabitants of Earth, human, and nonhuman, share a common 'life force'.**

1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*** 11. Like a tree can be part of a forest, I feel embedded within the broader natural world.**

1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*** 12. When I think of my place on Earth, I consider myself to be a top member of a hierarchy that exists in nature.**

1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*** 13. I often feel like I am only a small part of the natural world around me, and that I am no more important than the grass on the ground or the birds in the trees.**

1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*** 14. My personal welfare is independent of the welfare of the natural world.**

1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Welcome to the Connectedness to Nature Survey

Demographics

The following section is only used to gain a better understanding of the demographics of participants. None of the information can be connected to you personally but will be used in aggregate.

15. How do you identify yourself?

16. What is your age?

* 17. What is your student classification?

* 18. What is your major concentration? If you are a graduate student please answer "Graduate Student".

* 19. What is your career objective? Please place a 1, 2, 3, 4, or 5 (with one being the most desired) beside the top five organizations with whom you would most like to work. You may rank the rest if you wish but only the top five are required.

<input type="text"/>	Professional sport team
<input type="text"/>	College athletics
<input type="text"/>	Boys and girls club
<input type="text"/>	High school sport coach
<input type="text"/>	High school sport administrator
<input type="text"/>	Youth sport
<input type="text"/>	Recreational sport
<input type="text"/>	Campus recreation
<input type="text"/>	YMCA/YWCA
<input type="text"/>	Municipal recreation
<input type="text"/>	Federal recreation (eg. USFS, NPS, MWR, etc.)
<input type="text"/>	Commercial recreation agency
<input type="text"/>	Boy/Girl Scouts
<input type="text"/>	Sales
<input type="text"/>	Marketing
<input type="text"/>	Event/Program Management
<input type="text"/>	Facility Management
<input type="text"/>	Other

Prev

Next

Welcome to the Connectedness to Nature Survey

Closing

Thank you for participating in the Connectedness to Nature survey. Your time and effort is very valuable and we do appreciate it. To exit the survey please click the "done" button at the bottom of the page.

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Done

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